



Taking Successful Cuttings

- First be sure to clean work area and utensils and choose a clean and healthy mother plant from which to take cuttings.
- Using a sharp knife, cut about 1/2" below the node (the growing point for a new stem) or 3/4" below a leaf.
- Dip the node into rooting hormone gel or powder. Follow the instructions on the package. DO NOT dip stem directly into jar as this can spread diseases.
- Make a slit in the Grodan starter or use the round MACROPLUG with existing slit. Gently place the prepared cutting into the starter. Make sure there is some contact between the stem and the wool, but do not crush the wool around the stem.

Success Rate: 98%+ of Cuttings Will Root

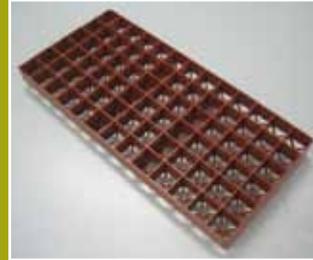
If your success rate is less, the most common reasons are:

1. Mistings or watering the plugs too much, or having the plugs sitting in water.
2. Mother plant had a disease.
3. Temperature was too hot or too cold inside the dome.
4. Chloramin is used as a disinfectant in most tap water. It is also a plant toxin. Since high levels of chloramin will kill cuttings, use bottled water instead, or use a carbon filter to remove chloramines.
5. Certain types of cuttings have specific requirements. Some will not root in high humidity, and others must be submerged in water - like Geraniums. They root only when plugs are kept submerged in water - without the use of a dome.

Before starting, search the internet for specific recommendations on how to start (propagate) your particular cutting.

Why Choose Grodan Starters?

- They are completely inert and clean— free of pathogens.
- They have a high water retention, so they will not dry out quickly.
- They are available in a variety of sizes and shapes suited for both cuttings and seeds, as reference in the Grodan Product Catalog and Website.
- They are versatile in that they can be transplanted into Grodan stone wool or any other media (such as coco, peat mixes, soil, etc.).
- A-OK plugs (1.5") and MACROPLUGS fit perfectly into GRO-BLOCKS and the Grodan Gro-SMART Tray.
- Choose the MACROPLUGS to easily root out a bare-root cutting.



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To locate a Grodan supplier, go to grodan101.com, and use the search locator.

Collect all six tri-folds to achieve greater success with Grodan:

INTRO Introduction to Hydroponics TRANSPLANT Rooting and Transplanting
WATER Watering and pH Conditioning GROW Growing Huge Plants
START Starting Seeds and Cuttings RECYCLE Recycling Used Grodan

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Grodan donates a percentage of all sales to Hydro for Hunger. To learn how you can also contribute, visit www.hydroforhunger.com.

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START

Starting Seeds and Cuttings



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START Starting Seeds and Cuttings

How to Start Plants

There is an easy way, and a lazy way. The easy way requires less input, and the lazy way requires more initial set up, but less maintenance afterwards. Instructions for both methods are explained in this brochure along with helpful hints on how to take the perfect cutting (clone).



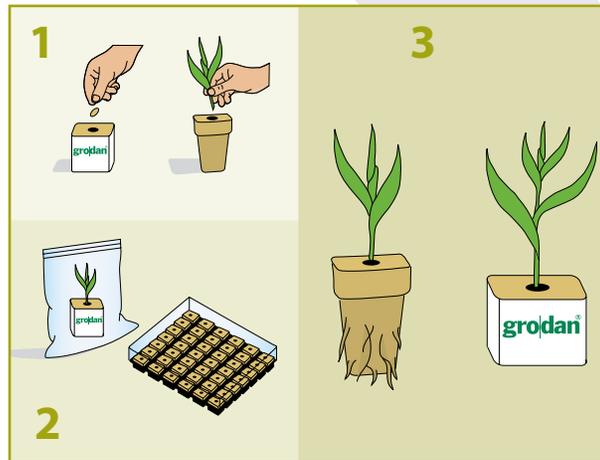
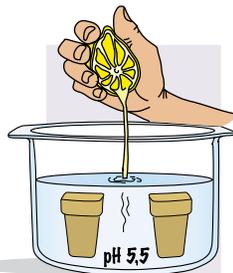
The Gro-SMART Tray™

GENERAL PREPARATION

Choose a Grodan starter such as A-OK™ plugs, round MACROPLUGS™ or wrapped MINI-BLOCKS™.

- Soak the Grodan starters by dipping them in a pH 5.5 water solution. Refer to Grodan's **WATER** guide for additional details.
- Start with good quality, clean seeds - or choose strong cuttings from a healthy mother plant (see back panel).
- Use rooting hormone for cuttings to achieve the best results.
- Use only low to medium sunlight or fluorescent lighting. Strong light will burn the seedlings or overheat the air inside the humidity dome.
- When unable to measure pH, squeeze half a lemon into a gallon of water and use that to lower the pH level approximately 1 point.

When starting from cuttings, consider soaking the stone wool in a weak (1/4 strength) nutrient solution, adjusted to pH 5.5 instead of plain pH 5.5 water - especially if the cuttings are typically "fast rooters".



STARTING PLANTS – THE EASY WAY!

- Plant seed in the hole of the wet starter. If using cuttings, dip them in rooting hormone just before inserting into the starter. NEVER squeeze the water out of the plug as that will ruin the air pockets in the product.
- Place starter in a zip-lock bag (leaving it open 1/2") or in a tray with a clear humidity dome. Starters should not need any water for the first 1-2 weeks. Mist them only if they begin to dry. DO NOT keep the starters soaking wet.
- When the first root tips become visible, gradually increase the opening of the bag to about 2", or adjust the opening on the ventilation dome.
- When the seedling has produced four leaves, remove it from the bag or from under the dome. Then gradually increase the nutrient concentration so that just before transplanting, the seedlings/cuttings are receiving nutrients at half-strength.
- In a few weeks, a well-rooted seedling will be ready for transplant. The time required for cuttings to root varies considerably depending on the type of plant. Typically, softer cuttings (like tomatoes, coleus, etc.) will root in about two weeks. Woody cuttings (like ficus) may take as long as eight weeks.

STARTING PLANTS – THE LAZY WAY

Start 1.5" A-OK starter, or round MACROPLUGS in Grodan's durable and versatile GRO-SMART Tray.

- Purchase a propagation heat mat and thermostat. Set the temperature to 85°F, then place the heating mat under a 10 x 20 flat with no holes. Place the Gro-SMART tray into the flat.
- Pour enough water into the tray to cover the bottom of the flat, but the water level should not touch any part of the Grodan sitting in the tray.
- Fill the tray with your cuttings or seeds prepared in the Grodan starters. A-OK 1.5" starters or the MACROPLUG fit in the individual cells of the GRO-SMART Tray. MINI-BLOCKS will sit securely on the mesh side of the tray. When complete, cover the flat with a humidity dome.
- DO NOT touch or water the starters for the first week. On the second week, *lightly mist the cubes* and top off with water in the tray if needed. Cuttings should be ready to transplant in two weeks, sometimes sooner. With seeds, it may take a little longer.
- Adjust the ventilation dome and increase nutrients as in the last step of the Easy Way before transplanting.

Make your own cloning system at a fraction of the cost of most systems. This way, you can avoid the problems associated with expensive continuous mist cloners such as overly warm water on the roots, or having plugs stay too wet to produce healthy roots.

